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ARIZONA CHEMICAL COMPANY, LLC

ATTN: INTELLECTUAL PROPERTY DEPARTMENT (LEGAL)

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EXAMINER

CALANDRA, ANTHONY J

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### **Advisory Action**

#### **Request for reconsideration**

Interview

#### **Applicant question whether an interview summary was sent out for the application.**

An interview summary was submitted by the examiner prior to the receipt date of the applicant's correspondence but was delayed in the mailroom and was sent to the applicant as of 3/22/2011.

#### **Applicant states two claims based upon the examiners suggestion have been added by amendment.**

The claim as written by the applicant added 112 issues. As stated in the interview amending claim 10 into claim 20 would be allowable. The examiner has explicitly written an example of how the claim should be written below.

A method for cooking hardwood comprising the steps of:

- i) contacting hardwood particles with a cooking liquor comprising a cooking aid, and
- ii) heating said particles and liquor to a temperature between 140°C and 180°C wherein said cooking aid comprises a blended mixture of about 70 m about 2% fatty acids, and about 20 to about 98% rosin acids and less than about 15% unsaponifiable material wherein said fatty acids comprise a monomer part produced during dimerization of fatty acids.

Art rejections

#### **Applicant argues that it would be helpful if a clear and detailed statement of claim interpretation for independent claim 1. The applicant argues that DUNLAP teaches dilution of the SYLVATAL 40DD prior to the addition of the chemical to the wood particles.**

The examiner understands that the Attorney for this case was not the Attorney throughout prosecution and therefore there may be confusion regarding the prosecution history of instant claim 1. A history of claim 1 one may of may be of help.

- On 6/23/2005 instant claim 1 started out as the following “A wood cooking aid characterized in that it comprises a mixture of fatty acids and rosin acids and/or salts thereof in a ratio which is effective in removing the extractives in pulp production”.
- On 11/20/2007 the examiner rejected the claim under 102(b) under Composition of American Distilled Tall Oils by MAGEE et al. as the claim was so broadly written to claim virtually every crude tall oil or distilled tall oil in existence.
- On 5/20/2008 the applicant submitted an informal amendment
- On 7/9/2008 the applicant submitted an informal amendment.
- On 11/4/2008 the applicant submitted the amendment for instant claim 1 that read “A wood cooking aid comprising a of fatty acids component and a rosin acids component and/or salts thereof wherein said fatty acid component is blended together with said rosin acid component to produce said cooking aid, and wherein said cooking aid comprises about 70 to about 2% fatty acids, and about 20 to about 98% rosin acids.”
- On 1/30/2009 the examiner finally rejected the claims under 102(b)/103(a) again over Composition of American Distilled Tall Oils by MAGEE et al.
- On 7/30/2009 the applicant filed an RCE and amended instant claim 1 to “A wood cooking aid comprising a blended mixture of fatty acid component and a rosin acid component and/or salts thereof and wherein said cooking aid comprises about 70 to about 2% fatty acids, and about 20 to about 98% rosin acids.”
- On the 10/01/2009 non-final rejection the examiner again maintained the MAGEE rejection.

- Throughout the process the applicant was claiming a wood cooking aid product. The alleged novelty/non-obvious in the claim was the use of the wood cooking aid product in pulping (which is a method of use not a product)
- On 4/1/2010 the applicant amended the independent claim 1 to claim the wood cooking aid as part of a mixture with the wood “A wood cooking mixture **comprising hardwood particles and a wood cooking aid**, wherein the wood cooking aid comprises comprising fatty acid component and a rosin acid component and/or salts thereof, and wherein said cooking aid comprises about 70 to about 2% fatty acids, about 20 to about 98% rosin acids, and less than about, 15%, saponifiable material.”
- The examiner withdrew the rejection based on MAGEE alone as it disclosed distilled tall oil which does not contain wood particles. The examiner entered a rejection based upon the DUNLAP reference on the 6/22/2010 rejection and maintained said rejection on the 1/19/2011 Final rejection.

The examiner again notes that the applicant is claiming in instant claim 1 a **product**. The applicant uses the preamble language comprising which is an open ended language. The product that the applicant is claiming comprises wood particles, cooking aid and is open ended to anything else including cooking liquor, water from moisture in the chips, and water from steam used to cook the chips. The product claim can have any dilution as long as the cooking aid maintains the proportions of fatty, rosin and unsaponifiables to each other.

It is important to note that the applicant argued the product claim but does not argue the method claims which result in the instant claimed product of claim 1. Method claim 20 forms a wood cooking mixture comprising a hardwood and cooking liquor comprising a wood cooking

aid. Therefore in instant claim 20 which forms the wood cooking mixture of instant claim 1 meets the limitations. Looking to instant claim 17, the applicant again uses the comprising language, thus allowing dilution.

Nowhere in the product claim or the method claims does the applicant exclude dilution. Therefore the applicant's arguments towards dilution in DUNLAP are unconvincing.

**The applicant argues that the dilution is before doing anything else.**

Instant claim 1 is a product claim. Dilution before or after does not change a product claim.

**The applicant points out that the claims might allow dilution that there may be some limits on the basis of dilution time, location or extent of dilution.**

The examiner finds no basis in the claims for limiting dilution. The applicant is encouraged to point out where the basis for a limit of dilution based is commensurate with the claims.

**Applicant notes that in the examples the dilution is to 30% in the specification and only 20% in DUNLAP.**

Again the applicant does not claim the extent of the dilution therefore any amount is allowed.

**Applicant traverses the term 'about'.**

The application does not give any way of distinguishing the scope of the term 'about'. The examiner previously stated that the applicant could drop the word 'about' if the examiners interpretation was too broad or give a reasonable interpretation of the word for the examiner to follow.

**Applicant argues that he is mystified to the examiner argument that he is not suggesting substituting birch for aspen.**

The distinction is subtle yet important; examiner again quotes the rejection “As distilled tall oil has been shown to be superior [pg. 374 Figure 1, pg. 377 Table 3, pg. 383 summary (3)] it would have been obvious at the time of the invention to apply known distilled tall oil treatment to the cooking process of birch ready for improvement. Applying a known technique to a known method ready for improvement to yield predictable results is typically prima facie obvious.”

This is similar to rational D of KSR “Applying a known technique to a known device (method, or product) ready for improvement to yield predictable results”.

In contrast rational B of KSR states “Simple substitution of one known element for another to obtain predictable results.”

The examiner is suggesting in the rejection that a person cooking birch would find it obvious to use tall oil products to improve the cooking process of birch.

The examiner is not suggesting as per rational B that a person of ordinary skill who is cooking aspen wood with DTO would then substitute birch wood for aspen.

**The applicant questions if the examiner is not suggesting substituting the two woods why the examiner would go to the lengths of comparing the two.**

The examiner compared the two to go to the predictable results prong of KSR. Two woods that have similar chemical compositions will act similarly in response to added chemicals.

**Applicant challenges that birch and aspen are similar woods the applicant points to the references in the IDS to show that they aren't.**

As for the Wikipedia references, Wikipedia is not a reliable evidentiary reference as it can be modified by individuals who are not experts in the art. In any case the two pages presented do not discuss anything in regards to chemical composition of the two woods.

As for the Chimney sweep reference the examiner questions whether the BTU is measured with Bark or without bark, additionally the wood is measured BTU values are measured on a volumetric basis. The examiner presents a reference from Dr. Arthur J Ragauskas Professor of Chemistry and Biochemistry at Georgia Tech (formerly at the Institute of Paper Science and Technology), hereinafter RAGAUSKAS, who shows that aspen and birch have the same caloric value on a weight basis [pg. 8]

Finally, the Maple An ideal Hardwood reference seems to suggest that the examiner is in fact correct. Figure 1 shows that hardwoods have typical properties in comparison to softwood. The reference shows that are aspen and birch hardwoods and that they are considered by those of ordinary skill in the art Northern Hardwoods [Figure 2 and pg. 2 of Maple-The ideal Hardwood reference column 1 paragraph 6]. They are close enough in properties that they come in mixed pulps according to the reference [pg. 2 of Maple-The ideal Hardwood reference column 1 paragraph 6]. It is further shown that the two species have similar lengths (1 vs. 1.3 mm) and have similar diameters (23 vs. 25 um) [Figure 4]. This is confirmed by RAGAUSKAS which states the lengths are (0.9 and 1.2 mm) and widths are (19 vs. 25 um) [pg. 9]. Finally RAGAUSKAS confirms that the hemicellulose, cellulose, lignin, and extractives are similar [pg. 17].

**Applicant presents new references in an attempt to rebut the examiner and challenges the examiners findings.**

As argued above, the only reference of clear academic value the Maple reference shows that birch and aspen have similar lengths and widths. The reference additionally supports the Examiners argument because it states that they are not only hardwoods but are northern hardwoods and can be found in mixed pulps, both facts of which are known to the person of ordinary skill in the art. So not only are do birch and aspen have the same resin problems according to DUNLAP but they also are both hardwoods and are both northern hardwoods.

It is additionally known to a person of ordinary skill in Pulp and Paper that hardwoods will have similar chemical compositions. RAGAUSKAS shows that they have similar cellulose content (49.4 vs. 50.2%), similar lignin content (21.8 vs. 18.2), similar hemicellulose (pentosans) 21.4 vs. 17.4 and similar extractive content (2.6 vs. 2.4%).

This is in addition to DUNLAP stating that they have high extractives and similar pitch problems. DUNLAP further states that both birch and aspen have the esters of the cycloartenol type which are difficult to saponify and remove [pg. 371 paragraph 2]. DUNLAP finds birch and aspen so similar that DUNLAP actually looks to tall oil treatments of birch to determine the amount of distilled tall oil to be used for aspen [pg. 373 paragraph 2]. So the applicants argument is best summed up that person of ordinary skill in the art as exemplified by DUNLAP can look to birch treatments for filling in blanks for aspen tall oil treatments but that very same person couldn't look to the aspen experiments for treatments of birch. The examiner finds said argument unconvincing.



**Applicant argues that "it is interesting that the amount of extractives may not be as important as their composition. So what about this?" The applicant then goes on to argue that neither DUNLAP nor the Examiner seem to enlighten this point.**

The examiner urges the applicant to read the whole reference in which it states that hardwoods have only traces of resin acids. Therefore the extractives of hardwoods are comprised of primarily fatty acids [pg. 366 last paragraph]. This is the important feature of the composition of extractives which answers the applicants query. DUNLAP makes this clear on pg. 367 where it states that resin acids act as co-surfactants with the fatty acids [pg. 367 paragraph 1]. It is the presence of resin acids in tall oil that when added to pulping of aspen (and birch) that act as co-surfactants and help remove the fatty acids present.

It follows that birch with the same level of extractives, which are primarily fatty acids, and cause the same pitch problems could be solved in a similar way.

The application is claiming (without limitation) every hardwood in the independent claims, which include northern, southern, and tropical hardwoods while mentioning only one single species birch, birch, and this is in clear conflict with the applicants argument that the person of ordinary skill in the art wouldn't expect success from using two woods both mentioned in the same reference, mentioned with similar pitch problems and that are both northern hardwoods.

**Applicant argues that is a secondary consideration of a long felt need for the deresination of birch.**

The applicant has not provided any evidence of a long-felt need. While it is known that birch has problems with resin there were prior art solutions including undistilled tall oil which is

alluded to by the applicant in the specification as a known solution “the problem with birch cooking can be avoided by using crude tall oil obtained from soft-wood cooking.”. As such the applicant’s arguments do not meet the test of Newell because the problems were previously satisfied .

Second, the long-felt need must not have been satisfied by another before the invention by applicant. *Newell Companies v. Kenney Mfg. Co.*, 864 F.2d 757, 768, 9 USPQ2d 1417, 1426 (Fed. Cir. 1988)

Additionally, it is not clear if the invention as claimed solves the problem as the applicant suggests. The applicant does not require any specific concentration of tall oil on wood. As such a low concentration of distilled tall oil may perform worse than a higher concentration of crude tall concentration. Additionally, in all of the independent claims the applicant fails to claim distilled tall oil.

***Applicant argues that DUNLAP only teaches one distilled tall oil does not get ‘a slam dunk’ for all distilled tall oils.***

The teaching of one distilled tall oil along with reasoning of why distilled tall oil is better gives the person of ordinary skill in the art sufficient reasoning to expect that other distilled tall oils will function well. The distilled tall oils of MAGEE all have high ratios of saponifiables to unsaponifiables. The distilled tall oils also of MAGEE have the resin acids which are effective at removing pitch. The person of ordinary skill in the art must also look to the clear absolute value of improvement of DTO vs. tall oil. The improvement of DTO over tall oil is such a large increase [Figure 1] that the person of ordinary skill in the art would be motivated to pursue distilled tall oils further.

**The applicant repeats that DUNLAP shows that tall oil is better than distilled tall oil sometimes.**

The ultimate conclusion of DUNLAP is that distilled tall oil is better. The examiner has also read the DUNLAP reference carefully and cannot find the exact instance the applicant is referring to. Figure 1 of DUNLAP shows distilled tall oil clearly better for total extractive removal. Figure 2 shows distilled tall oil better for total extractive removal. Table 3 again sides with distilled tall oil as does Figure 3. Figure 4 shows lower final extractive content in the fibers for DTO at concentrations higher than 1%.

**The applicant argues the issue of dilution of DUNLAP.**

This issue is dealt with above. The applicant does not claim any amount of the tall oil components on wood. The applicant does not claim any limitation on dilution of the tall oil on wood. When the tall oil is mixed with cooking liquor and the water in the digester for pulping it is ultimately diluted.

**The applicant argues that the examiner cannot make the jump from DUNLAP to MAGEE.**

**The applicant argues that the concentrations are critical.**

DUNLAP states that distilled tall oils and tall oils in general improve extractive removal because of high resin acids. DUNLAP also states that a high ratio of saponifiables to unsaponifiables improves extractive removal. The distilled tall oils of MAGEE have the resin acids necessary to remove extractives and have a low amount of unsaponifiables. The person of ordinary skill in the art would expect each and every one of the distilled tall oils to remove extractives from pulp. Through routine experimentation the person of ordinary skill in the art could determine the optimum distilled tall oil to use.

The examiner agrees that concentrations of components are important however, for obviousness purposes the applicant has not shown that the narrower claimed ranges of the dependent claims perform any better than the broader ranges.

**The applicant asks that the submitted Sylvatal 40DD reference sheet be added to the notice of reference cited.**

The sheet is already part of the record but as per the applicant's request the examiner will add the sheet to the notice of references cited, attached.

**The applicant argues that since DUNLAP discloses FARLEY and all rejections depend from DUNLAP that the rejections should be withdrawn. Applicant argues that extreme dilution would change the ranges of components involved. Applicant argues that the ratios of a 20% solution of Sylvatal 40 DD would have a concentration of 5.2-6.4%**

The product claims can have any amount of dilution because of the comprising language. The claims have no limitations which are commensurate with limiting dilution. The percentages as written in the claim must apply only to the ratios of fatty acid rosin acids and unsaponifiables to each other in the final wood particle and cooking aid mixture. This is the only interpretation that is reasonable based on the claims. This interpretation is necessary based upon how the applicant switched from claiming just the tall oil to claiming a tall oil mixed with wood to form a cooking mixture in 4/1/2010 amendment.

Is the applicant is arguing that claim 1 means there is 70 to about 2% fatty acids, about 20 to about 98% rosin acids, and less than about 15% unsaponifiable material and that the remainder of the composition is wood cooking mixture is hardwood particles? Meaning that at best there

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would be 78% wood and a total of 22% wood cooking aid (20% rosin, 2% resin, 0% unsaponifiables). This cannot be the interpretation the examiner gives the claim as 1) the applicant does not have support the amount of cooking aid on wood and secondly the ordinary artisan would not apply 22% cooking aid on wood. The examiners interpretation that the percentages claimed only disclose the ratios of the various components to each other and have nothing to do with other components such as dilution water or wood is the only interpretation that makes sense.

Should the applicant have another claim interpretation that is reasonable and the applicant has support for the interpretation the examiner is more than willing to consider it.

/Anthony J Calandra/

Examiner, Art Unit 1741

/Matthew J. Daniels/

Supervisory Patent Examiner, Art Unit 1741

